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Integrating clinical information in NHS Scotland: the role of Scottish Care Information Store

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ABSTRACT

A key plank in NHS Scotland's information management and technology (IM&T) eHealth Strategy is the web-based system known as Scottish Care Information (SCI) Store, which gives primary and secondary care clinicians access to core clinical information. There is one SCI Store in each of the 15 NHS Board areas. At present all GP practices in 11 of these areas have access to SCI Stores for test results. Work is underway to augment the Stores

with clinical letters and GP summary data. Strategically, SCI Store is seen as the ubiquitous element in our eHealth Strategy which will allow information to be shared across Scotland in a secure and reliable way.

Keywords: clinical information, eHealth Strategy, GP systems, SCI store

Background

Scottish Care Information (SCI) is Scotland's national programme to develop and implement online clinical information for clinicians.¹ SCI covers a range of Crown-owned information technology (IT) systems which include SCI Store, specialist SCI Diabetes Collaboration systems and SCI Gateway for secure transmission of referrals and discharge letters.

SCI Store was conceived three years ago as a pragmatic way of delivering online access to laboratory test results. Hence, a national licence for middleware (a program known as eBiz from Neon Systems, which extracts information from one system and puts it into another) was procured and a database with web browser was developed from the pioneering work of Raigmore Hospital in Inverness with Visionware Ltd. Since then the full range of interfaces to Scotland's local laboratory systems has been developed and the system put in place across Scotland, with browser access for general practitioners (GPs) and wards to the whole range of patients' test results.

Laboratory systems often use different patient identifiers, hence a 'multi-index' was developed which allows locally controlled cross-matching to ensure an incoming piece of information is attached to the correct patient's record. This cross-matching is in turn based on a link to one or more local patient administration systems (PAS) and the national Community Health Index (CHI) number patient identifier, equivalent to England's National Health Service (NHS) number.

There are two ways of getting access to the information held, the first being via a web browser backed by sophisticated access control. However, it is also useful to allow remote systems to access and use SCI Store's information. The first such use is for systems to 'slave' their patient index to SCI Stores, and the second is to allow extraction of specific pieces of information to be directly incorporated into the other system's patient record.

Figure 1 summarises where the system sits and how it works.

Implementation of SCI Store is under way through a support contract with Atos Origin

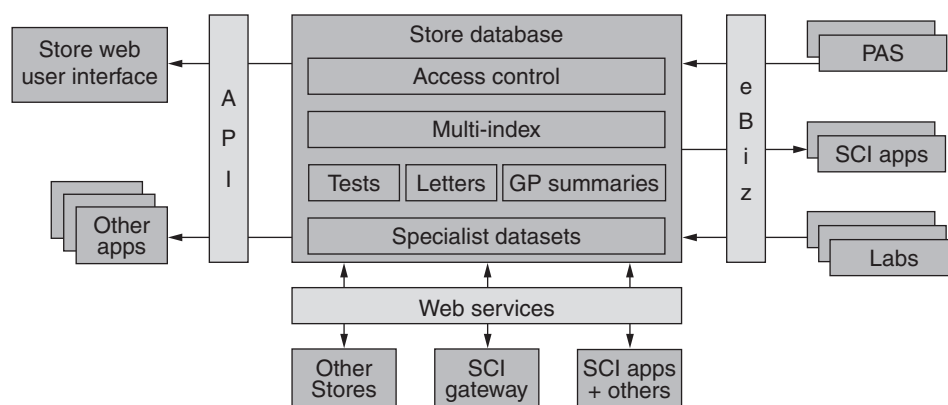


Figure 1 Schematic of SCI Store in relation to linked systems

(formerly SchlumbergerSemal) in all Scottish NHS Board areas; the largest site has all GP practices and wards live, with over 1000 users.

It goes without saying that this is by no means a technology-only challenge, hence a national project known as ECCI (Electronic Clinical Communication Implementation) is funding local, people-focused implementation support as well as development of common standards such as access control protocols and information standards.²

Is look-up access sufficient?

The emphasis for these repositories so far has been on the roll-out of 'look-up' access, for example to laboratory test results. It is obviously valuable to be able to see such results within minutes of them being analysed, as this reduces the requirement for telephone calls.³

Look-up access will always have its place, especially as it offers viewing of all results of tests on individuals, including those initiated in hospital, assuming the access protocols have been agreed. However, looking up a remote repository has its limitations, for example a separate log-on and password are required and having clinical information that is not integrated with the primary care record on the GP's system.

There are two approaches to addressing these limitations. The first is to leave the information in the remote repository, but to implement single log-on access from within the patient's GP system record. This would require technical arrangements to allow the username and password to work across both the GP system and SCI Store. This gets over the first hurdle – and has been shown to work in our proof of concept work – but does not address the requirement for integration into the GP electronic record. Clearly for the new General Medical Services (GMS) Contract,⁴ where quality target payments depend on electronically

verifiable data, there are benefits to having some results (for example, cholesterol levels) available within the GP system.

A new approach is therefore needed, but laboratory test results cannot simply be incorporated into the primary care record without the GP's knowledge. Such an approach would be dangerous and clinically unacceptable. Hence, an interface is needed which allows inspection of test results and initiation of actions such as 'ask patient to make an appointment'. The two screenshots (Figures 2 and 3) show the interface as it appears within GPASS, the system in use in around 85% of practices in Scotland.

Results will also remain available within SCI Store where they can be seen in the context of all investigations performed on the patient.

This 'download' function has been developed for GPASS and is now being rolled out. Meanwhile the various interfaces and standards to allow all GP systems to do likewise have been made available and plans are in progress.

The future for SCI Store

This hub in our infrastructure will continue to be developed, but not into a full replacement for specialist systems. It needs to be seen as the shared element of a range of systems, as well as a provider of services to those systems.

So what kind of developments in both content and services are envisaged for SCI Store? These can be grouped under three categories.

1 Core Clinical Services

- This refers to provision of non-specialist clinical information to the clinician at the coal face.

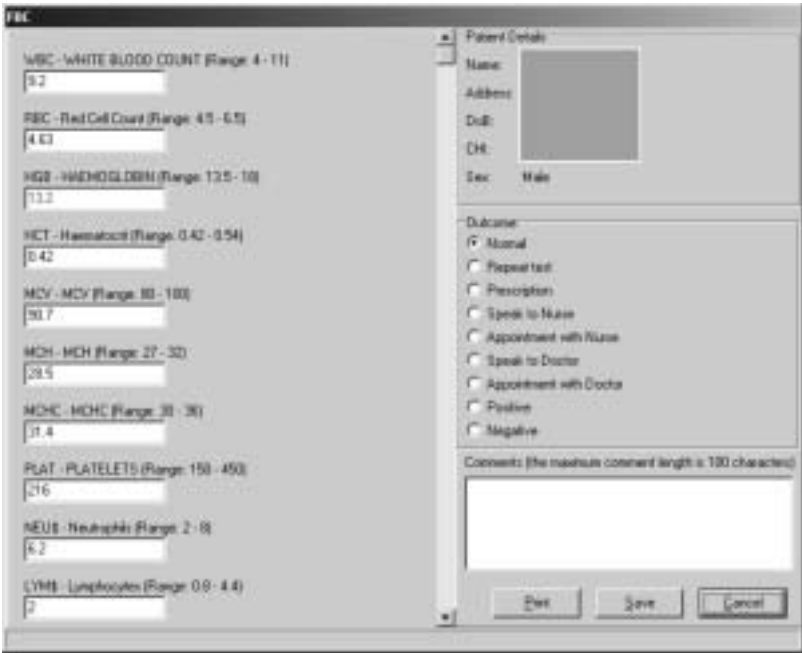


Figure 2 Screen showing details of downloaded test results, with clickable buttons for ordering actions

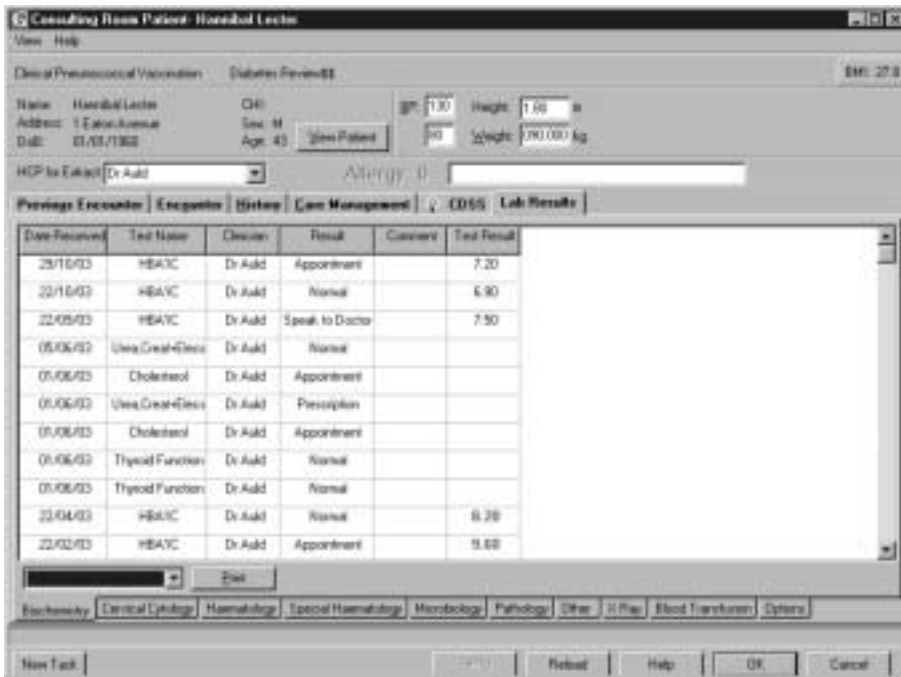


Figure 3 Consulting room screen showing results within patient's record

- A high priority for development of content is GP summary information to support out-of-hours and emergency care provision. The new GMS Contract,⁴ which allows GPs to opt out of many services, has added impetus to this, and we need to start pragmatically with, for example, current and repeat medication being extracted from GP systems and made available in SCI Store. This work is being led by the Royal College of General Practitioners' Scottish Clinical Information Management Project (SCIMP).⁵
- The other early target is to include copies of clinical letters in SCI Store, even if just Word™ files rather than gold-standard XML documents. SCI Store currently includes facilities to upload files such as letters, but a more robust mechanism needs to be

developed. In addition we need an indexing scheme for letters and other content.

2 Specialist Clinical Services

- This refers to specialist clinical information systems and services, both local and regional, across managed clinical networks.⁶
- Specialist systems already exist, and SCI Store does not seek to take their place. However, the often copious information in such systems is unavailable to other clinicians, particularly out of hours.
- Our vision is therefore similar to the summaries which are an accepted part of GP systems – specialist systems can contribute agreed ‘at a glance’ summaries to SCI Store. Examples would be patients’ diabetes status for accident and emergency department users of SCI Store or even a summary of outpatient attendances from outpatient systems. Clearly this vision needs specialist clinical leadership to define such datasets, and issues such as provenance of information and access control need also to be addressed.

3 Regional/national information services

- This refers to links between SCI Stores, for example to support care pathways, such as where a cancer patient from a remote area is seen in a specialist centre.
- Thinking is just beginning on this, but it clearly throws up a host of real issues, both technical and professional. For example, how do you know which SCI Store to look in? How is access to be controlled? Can we rely on sufficiently consistent patient identification? Should there be ‘any-to-any’ communication between local SCI Stores, or should information be copied into one national Store?

On prerequisites

The developments above cannot even be contemplated without addressing mainly non-technical prerequisites. In addition to obvious ones such as unambiguous patient and staff identification and dataset definition, others include the following:

Telecommunication

Clearly, for SCI Store to work to the satisfaction of clinicians, there must be fast and reliable telecommunications with end-to-end performance assurance.

Confidentiality protection and Data Protection Act

SCI Store has sophisticated access control facilities and audit trail. However, this is useless without local agreement on the ‘rules of the game’. Guidance on preparation of the necessary protocols has been agreed and issued, and it will be further developed as new categories of information become available in SCI Store.

Support structures

As systems become more central to delivery of care, including out-of-hours care, does the local organisation have the skills and revenue to take on the required level of support? How do we set up and afford round-the-clock, all-year-round support?

Clinical leadership

Across NHS Scotland we are in no doubt that strong clinical leadership is *sine qua non*. Recent moves to help drive this have been to establish a Clinical IM&T Lead in the Scottish Executive Health Department and to require each NHS Board to similarly establish such posts. Much needs to be done by way of clinical consultation on the above vision and roadmap, and if agreed then even more is required to ensure continued clinical ownership of implementation.

Dataset and clinical standards definition

Part of clinical leadership is the issue of dataset definition, which as discussed earlier must include the context/provenance issue. Addressing these issues has to be national if information is to be shared effectively.

Final word

The recent report by Professor Denis Protti on the implementation of electronic patient records (EPRs),⁷ produced for the Department of Health and NHS Information Authority, reminds us that:

In a nutshell, it is people, not technology, that make the difference between success and failure.

Also that:

When end users want to make IT tools work for them, even ‘poor’ tools can deliver real business value. Failure to realise value is seldom due to a tool’s need for changes

but to a mindset that is not motivated to work with the tool as it is.

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CONFLICTS OF INTEREST

None.

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Accepted April 2004